



Attorney Docket: 225/44173
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: UTE NEGELE ET AL.

Serial No.: 09/058,810

Group Art Unit: 1773

Filed: APRIL 13, 1998

Examiner: VIVIAN CHEN

Title: METALLIC SUBSTRATE FOR A VEHICLE BODY

RESPONSE

Commissioner for Patents
Washington, D.C. 20231

Sir:

The following is responsive to the Office Action dated February 8, 2002.

IN THE CLAIMS:

Please add claims 51-54.

51. A method for corrosion-proofing a metal substrate, comprising:
applying a bond coating to the substrate, the bond coating comprising at least one organic adhesion-conferring polymer, wherein the at least one adhesion-conferring polymer comprises at least one polybismaleimide selected from the group consisting of: (i) a homopolymer comprising a bismaleimide, (ii) a homopolymer comprising a maleimide-terminated oligomer, (iii) a homopolymer comprising a maleimide-terminated polymer, and (iv) a copolymer comprising a maleimide-terminated polymer; wherein the maleimide-terminated polymer is selected from the group consisting of:

#27
K3
8-16-02

RECEIVED
AUG 13 2002
TECHNOLOGY CENTER 1700

(A) a phenol resin;

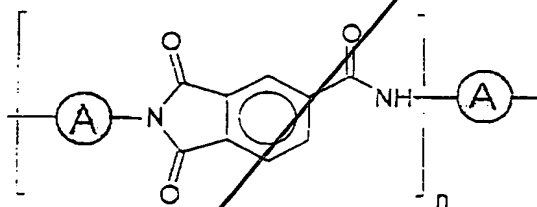
(B) a polyamide;

(C) a polyether ketone;

(D) a polyether sulfone;

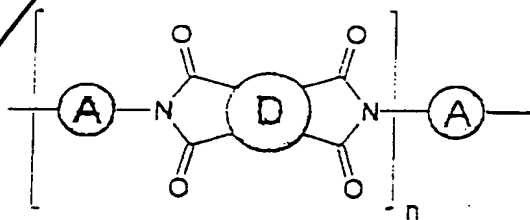
(E) a polyester;

(F) a polydianhydride of a polyfunctional acid, with the formula:



wherein A stands for diamine; and

(G) a polydianhydride of a polyfunctional acid, with the formula:



wherein A stands for diamine and D for dianhydride; wherein the coating is applied from an aqueous solution, an organic solvent solution, a dispersion or an emulsion; and

subsequently stabilizing the bond coating on the substrate surface.

52. A method for corrosion-proofing a metal substrate, comprising:

applying a bond coating to the substrate, the bond coating comprising at least one organic adhesion-conferring polymer, wherein the at least one adhesion-conferring polymer comprises at least one polybismaleimide selected from the group consisting of: (i) a homopolymer comprising a bismaleimide, (ii) a homopolymer comprising a maleimide-terminated oligomer, (iii) a homopolymer comprising a maleimide-terminated polymer, and (vii) a copolymer of an organic compound selected from the group consisting of

(a) polymerizable unsaturated compounds, (b) compounds that contain amino groups or thio groups, and react with bismaleimides in a Michael Condensation Reaction, (c) compounds that contain allylic double bonds and react with bismaleimides in an EN reaction, (d) cyanate compounds that react with bismaleimides with addition and cyclization as well as trimerization, (e) isocyanate compounds, (f) epoxides, (g) carboxylic acids, (h) phosphonic acids, (i) vinyl monomers, (j) radically polymerizable unsaturated compounds, and (k) radically polymerizable unsaturated oligomers, and at least one of compounds selected from the group consisting of

(1) a homopolymer comprising a bismaleimide, (2) a homopolymer comprising a maleimide-terminated oligomer, and (3) a homopolymer comprising a maleimide-terminated polymer,

D1
Cont

wherein the coating is applied from an aqueous solution, an organic solvent solution, a dispersion or an emulsion; and subsequently stabilizing the bond coating on the substrate surface.

53. A method for corrosion-proofing a metal substrate, comprising: applying a bond coating to the substrate, the bond coating comprising at least one organic adhesion-conferring polymer, wherein the at least one adhesion-conferring polymer comprises at least one polybismaleimide selected from the group consisting of: (i) a homopolymer comprising a bismaleimide, (ii) a homopolymer comprising a maleimide-terminated oligomer, (iii) a homopolymer comprising a maleimide-terminated polymer, and (vii) a copolymer of an organic compound selected from the group consisting of

(a) styrene, (b) substituted styrene, (c) acrylonitrile, (d) acrylic acid, (e) one or more esters of acrylic acid, (f) methacrylic acid, (g) one or more esters of methacrylic acid, (h) acrylamide, (i) glycidyl acrylate, (j) glycidyl methacrylate, (k) divinylbenzene, (l) divinyltoluene, (m) vinylphosphonic acid, (n) vinylbenzoic acid, (o) crotonic acid, (p) cinnamic acid, (q) sorbic acid, (r) undecenoic acid, (s) oleic acid, (t) caffeic acid, (u) a vinylsilane compound, (v) a vinyl ether, (w) allylphenol, (x) o,o-diallylbisphenol A, (y) tetraglycidylldiaminodiphenylmethane, (z) poly[(phenyl 2,3-epoxypropyl ether)-co-dicyclopentadiene], (aa) 4-vinylcyclohexene 1,2-

epoxide, (bb) 4-vinylcyclohexene diepoxide, (cc) ethylphosphonic acid, and (dd) benzoic acid, and at least one of compounds selected from the group consisting of

- (1) a homopolymer comprising a bismaleimide, (2) a homopolymer comprising a maleimide-terminated oligomer, and (3) a homopolymer comprising a maleimide-terminated polymer,

wherein the coating is applied from an aqueous solution, an organic solvent solution, a dispersion or an emulsion; and subsequently stabilizing the bond coating on the substrate surface.

54. A method for corrosion-proofing a metal substrate, comprising:

applying a bond coating to the substrate, the bond coating comprising at least one organic adhesion-conferring polymer, wherein the at least one adhesion-conferring polymer comprises at least one polybismaleimide selected from the group consisting of: (i) a homopolymer comprising a bismaleimide, (ii) a homopolymer comprising a maleimide-terminated oligomer, (iii) a homopolymer comprising a maleimide-terminated polymer, and (vii) a copolymer of an organic compound selected from the group consisting of

- (a) a polymerizable unsaturated monomer; (b) a polymerizable unsaturated oligomer; (c) a polymer; (d) a compound containing an amino group; (e) a compound containing a thio group; (f) a compound containing allylic double bonds; (g) a cyanate compound; (h) an isocyanate compound; (i) an epoxide; (j)

D1
Cont